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THE AMERICAN
JOURNAL OF PHARMACY

DECEMBER, 1919

EDITORIAL.

THE OBLIGATION OF PHARMACISTS TO SUPPORT THE PROHIBITION ENACTMENTS.

The Eighteenth Amendment to the United States Constitution and the legal enactments for the enforcement of prohibition are placing great responsibilities upon the profession of medicine and pharmacy. Upon the former devolves the duty and responsibility of determining when and where and to what extent distilled spirits and wines are to be prescribed as necessary remedial agents. We have faith that the professional spirit, actuating a very large percentage of the medical practitioners, will guide them in the proper discharge of their share of the responsibility. Experience, however, has taught us that there is grave danger that a small minority of the doctors of the country will lend themselves to prescribing alcoholic beverages under the guise of medicines and thus sell their professional inheritance for a mess of potage.

Upon the pharmacists will devolve the double duty, as the sole purveyors of non-beverage distilled spirits and wines at retail, to guard against infractions of the laws by either prescribers or users. It is difficult to see how they are going to escape the additional responsibility thus placed upon them. It becomes the duty of each to fully maintain the honor of his calling and to sustain not only the letter but in his acts likewise the spirit of the law.

Doubtless there will be many temptations offered and the devious ways suggested to those whose moral courage is not strong enough to withstand the tests may lead some into the way of the transgressor. The penalties provided for infractions of the Volstead Act are surely heavy enough to deter any but the most careless or hardened and indifferent from intentional violations.

An insidious form of temptation is now being exploited in the numerous recipes and products that are flooding the market for the production of home made liquors. Special efforts are being made to induce the drug trade to become the medium of distribution for such and the main argument is the prospect of extraordinary profits —as one circular puts it, "a profit that is more than satisfactory." While some of these may not violate the letter of the law, the evident purpose is to nullify its value in many ways. It is inconceivable that any jobbing druggist who is in harmony with the principles announced by the National Wholesale Druggists Association or who is on the ethical plane of membership in that organization should engage in the distribution of such wares. Still more incomprehensible and even reprehensable would be the selling of these by pharmacists. We can only urge that in deference to the honor and responsibility of their profession that not one should belittle alike his calling and himself by lending his efforts to such nefarious traffic.

The situation that is developing in this country may have a very important bearing upon the professional status of pharmacy. Of one thing we can rest assured, namely, the extent to which the pharmacists under this added responsibility discharge faithfully their duties, will determine their future right to the respect and confidence of the law making bodies and also the recognition accorded by other professions.

G. M. B.

THE WASHINGTON HEARINGS ON PROPOSED REGULATIONS FOR PROHIBITION ENFORCEMENT.

During the first week in December a series of hearings or conferences were held in Washington between the officials of the new Division of the Bureau of Internal Revenue charged with the enforcment of the Eighteenth Amendment to the Constitution and the Volstead Prohibition Enforcement Act and the representatives of the several professions and the various industries that are compelled to use and participate in the distribution of non-beverage distilled spirits and wines. These were presided over by the recently appointed Prohibition Commissioner John F. Kramer.

The hearing on Monday, December 1, was devoted to the sub-

jects of barbers' supplies, perfumes and toilet articles and was well attended by representatives of these industries, their attorneys and a number of chemists employed therein.

The Commissioner in his opening address gave the assurance that it was not the intent of the bureau to interfere with legitimate enterprises nor in any way to cripple or destroy such, but wherever possible to render assistance to all manufacturers who had occasion to use alcohol and whose intent was to obey the law. He read the resolutions adopted by the National Wholesale Druggists' Association and commented favorably upon the attitude of helpfulness to the officials shown thereby and advocated that upon each member of the various trade organizations there be impressed his duty in this respect.

Dr. A. B. Adams, chemist of the Internal Revenue Bureau, spoke of the necessity for eliminating from the barbers' supply trade and manufacture of perfumes and toilet articles certain products that could be and some of which had been already used for beverage purposes. He cited as examples certain hair tonics consisting mainly of alcohol with a trace of quinine or cantharides. He stated that the Department had under consideration a requirement that bay rum and toilet waters would have to be denatured by the addition of some modifying substance. It was explained that tartar emetic to the extent of one fourth grain to the fluid ounce was a suggestion that was being favorably considered by the department and that while at the present they were not prepared to make such statement as a conclusion, it was decided that some modifying substance that would render such products unfit for use as beverages would have to be added before sale to consumer.

Mr. W. L. Crounse, attorney for the National Wholesale Druggists' Association, in addition to the resolutions adopted at the two last conventions of that organization, which had been referred to in the remarks of Commissioner Kramer, gave further assurance of the support of the laws by the members of that body and their purpose to coöperate with the bureau in the enforcement of the law. He also presented the resolutions recently adopted by the Manufacturing Perfumers' Association. He further urged that in the framing of regulations, reasonable provision be made for the disposal of the stocks on hand which represented a very large investment, the loss of which would be serious to the holders of such merchandise.

Mr. H. B. Thompson, attorney for the Proprietary Association, asked that whatever modifying substances may be decided upon that these be such as will not interfere with the nature of any preparation and its intended use and not incompatible with the formula.

Mr. E. C. Brockmeyer, attorney for the National Association of Retail Druggists, stated that the retailers were those upon whom the great responsibility had been placed by these laws and that they must very largely determine the intent of the purchasers. The assurance of this active association in coöperating with the Government in these matters was guaranteed.

The Barbers Supply Dealers' Association was represented by Mr. A. Edlis of Pittsburgh, who read a statement prepared by the Legislative Committee of that organization. It was suggested that the Department "should carefully investigate all applicants for permits to purchase non-beverage alcohol, and that some method be established whereby an applicant must thoroughly establish that his objects are legitimate, other than by the bond that is required by law."

Mr. Wayne B. Wheeler, attorney for the Anti-Saloon League, stated that it was not the intent of that organization to interfere with the proper use of non-beverage alcohol by any industry.

In the general discussion that followed, it developed that the Department's experiments were limited to but a few days' trial of tartar emetic as a modifying agent for bay rum, that no determination had been made as to the toxic action or of its possible systemic effect as a cumulative poison and that no announcement of its use as an approved denaturing agent had yet been promulgated. The consensus of opinion of the expert chemists and technical workers present was that tartar emetic was too violent a poison to be recommended for such purposes and untoward results would likely follow its application in this way.

Dr. Ettner, as chairman of the committee of the Perfumers' Association that had been appointed to make a special study of this subject advised against the use of tartar emetic as entirely too toxic and the use of which might prove a continual source of danger alike to the manufacturers and the unsuspecting user. His committee had under consideration a number of possible modifying substances and experiments not yet completed suggested that several were promising, but until these experiments permitted of a definite decision it was unwise to express a conclusion.

At a conference of the scientific and technical experts present held later in the day, it was decided to request that unless the knowledge justified the crystallizing of opinion in favor of any one agent that the manufacturers and dealers in bay rum and toilet waters requiring such denaturing addition, be permitted to select an alternative substance meeting with the approval of the Division.

The hearing of Wednesday, December 3, was given to the consideration of liquid medicinal compounds and was the most largely attended of these conferences. Commissioner Kramer in opening the meeting stated that the question under consideration was not prohibition as we must look upon that issue as determined but that the question confronting us was that of obedience to the law. He reiterated that it was not the purpose of the Department to interfere, much less to destroy, any legitimate business.

Dr. A. B. Adams, chemist of the Bureau, took the position that there "was no sanctity guaranteed by the fact that a preparation was included in the Pharmacopœia or the National Formulary." He presented the following list of U. S. P. and N. F. preparations fit for use as beverages:

Elixir Aromaticum (Elixir Aromatic).
Elixir Glycyrrhizæ (Elixir of Licorice).
*Spiritus Juniperi Compositus (Compound Spirit of Juniper).
Tincture Cardamomi Composita (Tincture Cardamom Compound).
Tinctura Lavendulæ Composita (Compound Tincture of Lavender).
*Tinctura Zingiberis (Tincture of Ginger).
*Cordiale Rubi Fructus (Blackberry Cordial).
Elixir Anisi (Elixir of Anise).
Elixir Aromaticum Rubrum (Red, Aromatic Elixir).
Elixir Aurantii Amari (Elixir of Bitter Orange).
Elixir Cardamomi Compositum (Compound Elixir of Cardamom).
Elixir Taraxaci Compositum (Compound Elixir Taraxacum).
*Spiritus Myrciæ Compositus (Compound Spirit of Myrcia).
Tinctura Aromatica (Aromatic Tincture).
Tincture Caramellis (Tinctura Caramel).
Vinum Aurantii Compositum (Compound Wine of Orange).
*Vinum Carnis (Wine of Beef).
*Vinum Pepsini (Wine of Pepsin).
Vinum Pruni Virginianae (Wine of Wild Cherry).
Elixir Glycyrrhizæ Aromaticum (Elixir of Glycyrrhiza, Aromatic).
Elixir Gentianæ Glycerinatum (Glycerinated Elixir of Gentian).

*Vinum Carnis et Ferri (Beef, Iron and Wine).
Tinctura Amara (Bitter Tinctura).

Those marked with an asterisk he considered as especially prone to misuse and cited the extensive misuse of "Essence of Jamaica Ginger" and an instance where Compound Spirit of Juniper was manufactured and advertised as a substitute for gin.

Mr. W. L. Crounse reiterated the assurance of support from the Wholesale Druggists' Association. Mr. H. B. Thompson called attention to the position assumed by the Proprietary Association some years ago in resolutions adopted declaring that no preparations would be manufactured except for legitimate medicinal use and that the attitude of this association was to be right and also to compel the other fellow to get right and that it stood ready to aid the Government officials by every means possible.

Dr. J. M. Francis, of Detroit, speaking for the Manufacturers of Pharmaceuticals, said that the proper amount of alcohol that was necessary for extraction, solution and preservation of medicinal preparations was the result of generations of experiments and that these had been the factors in determining the percentages of alcohol recommended in the formulas of the Pharmacopœia and National Formulary. He cited essence of pepsin as an example where the amount of alcohol necessary to prevent precipitation of its active constituents and at the same time to maintain a permanent preparation that will not ferment was determined by many experiments. Unfortunately some of these medicinal preparations were of a character to lend themselves to misuse by those who had the drink habit. Certain of these in his opinion did not possess a great importance to the physician yet he conceded that in domestic practice they may be important as household remedies.

Dr. Thomas H. Carmichael, of Philadelphia, speaking as chairman of the committee on Pharmacopœia of the American Institute of Homeopathy, voiced the objection of these physicians to a limitation being placed upon the amount of alcoholic preparations that a dispensing physician could purchase, this limit being placed by T. D. 2940 at two quarts within one year, unless the physician was bonded the same as any other dealer or user of non-beverage spirits. In his opinion at least five gallons should be allowed to each physician, and without a bond being required.

Mr. Samuel C. Henry, President of the National Drug Trade Conference, asked the Bureau to compare the small percentage of

medicinal alcoholic preparations that might possibly be misused for beverage purposes against the quantity used for strictly medicinal purposes. The druggists are bonded and their permits for the manufacture and sale of non-beverage medicinal preparations could be revoked by the Bureau in the event of failure to comply with the requirements of the law.

Mr. E. C. Brockmeyer, counsel of the National Association of Retail Druggists, stated that the brunt of the responsibility would rest upon the retail druggists, and that while many of them were not equipped with laboratory facilities for testing the numerous commodities that enter into their commercial operations, he assured the Commissioner that the Association as a body was ready to co-operate to the fullest extent possible in support of the law and the regulations.

Mr. Wayne B. Wheeler reiterated his statement of Monday that it was not the purpose of the Anti-Saloon League, which he represented, to interfere with any legitimate trade or profession. He pointed out the penalties to which violators of the prohibition laws would be subjected.

Prof. Charles H. LaWall, representing the U. S. P. Committee, stated that the Pharmacopœia had endeavored in every instance to limit the use of alcohol to the amount required for the purpose of extraction, solution and preservation of the preparation. In doing so, two objects were in view—the excessive cost of alcohol and the desire to reduce to a minimum its unnecessary application in medicines.

Mr. G. M. Beringer, as a member of the Committee on Revision of the U. S. P. and the N. F., stated that he was pleased to note that the Commissioner recognized that there was a dual purpose in the Volstead Act, as indicated by its title: namely, not only to prohibit intoxicating beverages but likewise to secure an ample supply of alcohol and promote its use in scientific research and in lawful industries and surely no industry is more essential than that of the manufacture of medicinal supplies, in which alcohol serves as a necessary material. He was grieved to note from the remarks of Dr. Adams, that official preparations of the U. S. P. and N. F. had been linked with proprietary and other substitutes really intended for beverage purposes. The fact that a preparation was included in either the U. S. P. or N. F. indicated that there was sufficient general use for it as a medicinal substance to justify its inclusion as

a standard formula in either of these two legal authorities. From the "Special Notice" in the N. F. he read the following paragraph:

"In accordance with this definition, the standards described in this National Formulary are intended to apply only to such substances as are used solely for medicinal purposes, or when professedly sold or dispensed for medicinal use. They are not intended to apply to substances sold professedly for technical and non-medicinal uses."

A similar statement likewise appears in the U. S. P., and the inclusion of any formula in either of these two standard works indicates its need and use as a medicinal substance. Compound spirit of juniper, which Dr. Adams characterized as an "imitation gin," was placed in the U. S. P. simply as a proper form for the exhibition of oil of juniper, where the physician desired to prescribe same for its diuretic effect.

In more than forty years' experience in pharmacy, in daily contact with physicians and their practice, he had never known of the misuse of this preparation, but had frequently known it to be prescribed in relatively small quantities for its recognized therapeutic activity. Compound tincture of lavender is an ingredient in several other formulas, notably solution of potassium arsenite, where it serves the purpose of distinguishing an otherwise colorless and odorless solution by giving it a distinct color, odor and taste, by which it can be readily recognized and mistakes in its use prevented.

All of the preparations named are more or less commonly prescribed; some throughout the entire country and others only locally, and to forbid their manufacture and to eliminate them from the practice of medicine would cause endless trouble in the adjustment of thousands of prescriptions on file, the renewal of which is necessary. Further such a course would be destructive of the scientific development of pharmacy, which has been along the lines of making medicinal preparations more palatable and efficient.

After this hearing an informal meeting of the representatives of the various associations and firms present was held, with the purpose of endeavoring to frame some constructive suggestions that would aid the Commissioner in framing regulations covering medicinal preparations. Thirteen pharmaceutical and drug trade associations and sixteen pharmaceutical manufacturers were represented in this gathering. As the result of their deliberations, the following recommendations relating to the tentative list of U. S. P. and N. F. preparations submitted at the conference were adopted by resolu-

tion and later submitted to the Prohibition Commissioner as representing the views of pharmacy and the drug trade thereon.

1. That it is the sense of this meeting that none of the U. S. P. or N. F. preparations appearing in the list submitted by the Commissioner of Internal Revenue be eliminated until such time as it is proven that they are being generally used for beverage purposes, especially in view of the fact that the decennial revision of the U. S. P. and N. F. will shortly be made.

2. That we endorse the practice of the Bureau of Internal Revenue requiring a label to be affixed to all medicinal preparations which might be used for beverage purposes, stating clearly that non-beverage alcohol is used in the preparation and that it is a violation of the law to sell or use the same for beverage purposes.

3. That sales by wholesalers and manufacturers of elixirs on this list be made only to those holding permits for the use and sale of non-beverage spirits and duly licensed physicians.

4. That sales of elixirs on this list be made to the consumer only when properly medicated so as to make them unfit for beverage purposes or upon a physician's prescription.

5. That spiritus juniperi compositus (compound spirit of juniper) and spiritus myrciæ compositus (compound spirit of myrcia) be sold to the consumer in the unmodified form only on a physician's prescription.

6. That tinctura cardamoni composita (tincture of cardamom compound), tinctura caramellis (tincture caramel), tinctura aromatica (aromatic tincture), and tinctura amara (bitter tincture) be sold to the consumer in the unmodified form only on a physician's prescription.

7. That tinctura lavendulæ composita (compound tincture of lavender) and tinctura zingiberis (tincture of ginger) be sold in the unmodified form to the consumer in quantities not greater than two fluid ounces at one time and not more frequently than once in ten days to the same purchaser excepting upon a prescription of a physician.

8. That cordiale rubi fructus (blackberry cordial) be sold in the unmodified form to the consumer in quantities not greater than four fluid ounces at one time and not more frequently than once in ten days to the same purchaser, excepting upon a physician's prescription.

9. That the sale of vinum aurantii compositum (compound wine

of orange), vinum carnis (wine of beef), vinum pepsini (wine of pepsin) and vinum pruni virginianæ (wine of wild cherry) be made to the consumer only when properly medicated so as to make them unfit for beverage purposes or upon a physician's prescription.

10. That vinum carnis et ferri (beef, iron and wine) be sold in quantities not greater than one pint to the consumer and only upon the prescription of a physician.

The hearing on Friday, December 5, was devoted to the subject of flavoring extracts. Commissioner Kramer explained that the conference had been called to consider Paragraph (e), Section 4 of the Prohibition Enforcement Act, permitting the manufacture and sale of "flavoring extracts and syrups that are unfit for use as a beverage or for intoxicating beverage purposes."

Mr. R. H. Bond, of Baltimore, speaking in behalf of the Flavoring Extract Manufacturers' Association, claimed that the intent of Congress was that such products should be untfit for use by the normal individual. Doubtless persons of morbid tastes and with intemperate habits might endeavor to use flavoring extracts and many other substances containing non-beverage alcohol to satisfy their abnormal appetites. He urged that consideration be given to the needs of the public, which has been accustomed to the use of flavoring extracts as now manufactured and demands the continuation of such for legitimate purposes.

Mr. Thomas E. Lennen, counsel for the National Manufacturers of Fruit and Flavoring Extracts, said that the manufacturer could not follow his products from the manufacturing laboratory to the ultimate consumer, and if such products were sold without their knowledge by the retailer for beverage purposes, the responsibility for such sale should rest upon the dealer who thus violated the provisions of the law.

Mr. J. G. Caffrey, assistant to the Prohibition Commissioner, advised that such has been and will be the attitude of the Department. Commissioner Kramer, however, stated that the manufacturers should not lose sight of their share of the responsibilities under the law, and that if their sales were made under circumstances from which the seller might reasonably deduce that these were to be used as beverages, the Department would assume that the responsibility rested upon such manufacturer.

Mr. J. L. Clawson, of Philadelphia, claimed that the attention of the Department should also be directed to the consumer who

obtained such preparations and used them improperly as beverages.

Various suggestions as to the size of containers to be used in the sale of flavoring extracts were considered, but no agreement was arrived at by the representatives of this industry that a limit should be placed upon the size of the container by the regulations.

It was apparent to those attending these conferences that the officials realize the enormity of the task imposed upon them to frame satisfactory regulations under the existing laws. It was equally apparent that the trade interests represented are uniformly in sympathy with the Department and desirous of rendering constructive aid in solving the numerous problems involved.

The unusual authority and power granted to the Commissioner, if arbitrarily assumed, would enable him not only to interfere with legitimate industries, but to seriously cripple them and prevent their development or even destroy them.

Take the perfume industry as an example: the American manufacturers have shown a remarkable development in this art, not only in quality but likewise in the growth of the industry and the amount of products exported. By discrimination or unwise regulations, this branch of American manufacture may be seriously handicapped. The Department should be exceedingly slow in framing regulations that are not absolutely called for that would interfere with this industry. This applies with even greater force to the manufacture of pharmaceutical and medicinal preparations.

It is sincerely hoped that in questions of vital importance to the public at large and to the industries concerned, the officials will accept the advice of representative men whose many years of acquaintance with trade and professional practices should be a guide to the Department in this work. To unnecessarily interfere with the necessary supplies of commonly used medicines would be an unjustifiable exhibition of authority.

G. M. B.

OPIUM IN CHINA.

By Ying C. Wong.

Introduction.

With the introduction of Western ideas, and the pushing eastward of the West with mingled awe and inquisitiveness for its own advantage, China has been, during the last twenty years, facing many reforms, changes and struggles which might be of practical use in saving her from degradation and corruption. One of the many struggles is the suppression of the opium evil, which has cost the nation billions of dollars, and more important than that, has led millions and millions of her strong citizens into wreck and misery. She has fought this gigantic moral conflict which has raged over a territory comparable in size to the United States. Hundreds of thousands of officials, gentry, merchants, students and farmers have been drawn into it. Blood has been shed and property has been destroyed on a large scale. Its victory at the end would undoubtedly be the most wonderful one on a vicious private habit that the world has ever known.

History and Cultivation of the Poppy.

The poppy does not seem to have been indigenous to China, and has been unknown previous to the Tang dynasty (618–907 A.D.) It was then introduced by Arab traders as a soporific drug, and the plant, either as a handsome garden flower or as a useful medicine, is repeatedly mentioned down to the seventeenth century. In 1621 tobacco-smoking and tobacco cultivation were introduced from the Philippine Islands. In the time of the last Ming Emperor (1627–1644 A.D.), tobacco-smoking was as vigorously denounced and prohibited as opium-smoking was a hundred years later. Opium-smoking was first heard of in the fourteenth century. In 1729 there was an edict issued which prohibited the use of opium and ordered the closing of the smoking dens. The importation of opium was forbidden under very severe penalties. The opium on seizure was to be burned, the vessel carrying it confiscated, and the Chinese salesmen were punished with death. Late in that century, because of the British East India Company's pushing its Bengal opium into the various ports, the habit took root in all parts of the country. The British found that it was a lucrative trade and never gave it

up. The total gain from Indian opium, that is the amount paid by China for that commodity above its cost price between 1773–1906, has been estimated as two billion dollars. In about 1840, the Emperor became so alarmed at the inroads of the poison, that he appointed Lin Imperial commissioner at Canton with orders to put down the trade. His efforts brought him into collision with the British traders and his destruction of ten thousand chests of opium precipitated the first Opium War. It ended in England's forcing on China a humiliating treaty which heavily indemnified the traders for their losses. Besides this, the concession of Hong Kong was given to Great Britain. The grave contention about the opium trade, was, however left untouched, and the Chinese Government, with the great trouble and danger of the Tai-ping rebellion (1850–1864) on their hands, irritated by continuous opium-smuggling, challenged a second Opium War in 1857, resulting in the Treaty of Tientsin which bound the Chinese Government not to interfere with, nor limit the introduction of Indian opium into the Empire.

Until this time the government had not tolerated the cultivation of the poppy plant, but now, rather than see the country drained of silver to buy of India a narcotic that could easily be produced on her own soil, the government removed its restriction, and the poppy spread with great rapidity. In the end, six sevenths of the opium consumed was home-grown.

In most parts of China, the cultivation of the poppy spread at an alarming rate; the interior provinces shut away by mountains from the commercial highways, especially were given over to poppy growing. The reason is that opium is the one crop that can be gotten to market without most of its value being eaten up in the cost of transportation. To the farmers of Yunnan, Kweichow, Szechuan, Shensi, and Kansuh, opium is the only road to the market, just as in Washington's time, whiskey was the only route by which the trans-Allegheny settlers could get their surplus corn to tidewater, and poppy prohibition stung some of them into resistance just as the Federal taxes on spirits led the farmers of Western Pennsylvania into the Whiskey Rebellion of 1798.

Some Interesting Synonyms and Their Application to the Different Grades of Opium.

With the spreading of the growing of the poppy, the immense importations of foreign opium, and the popular use of the drug by

the people, opium in China was given many very interesting names. The principal ones are "Kung-yen" (public-smoke), "Kung-kao" (public-extract), "Kung-tu" (public-earth), and "Kung-pan-tu," from the Chinese name for the East India Company, Kung-pan-ya. These terms are also used for Patna opium and for the "first-class" quality. Another name for Patna opium is "Ta-tu" (big-earth), while the Malwa is known as "Hsiao-tu" (small-earth). "Yen-tu" (smoke-earth), "Yang-tu" (foreign-earth), and "Kwang-tu" (Canton-earth), are common names for opium, while "Hei-tu" (black-earth) is a slang term for it. The commonest colloquial term, however, is "Yang-yen" (foreign-smoke). The foreign drug is considered the best, and is not noticeably replaced by the native article, although this latter is called "Chuan-tu" (Chuan-earth), and in favorable years can be produced at about half the cost of the Indian drug. It is made to imitate Malwa opium, and has been found to contain 6.94 per cent. of morphine. Yunnan opium, and that from Kwei-chou, are called "Nan-tu" (southern-earth), while that from Kansu, Shensi and Shansi is called "Hsi-tu" (western-earth). These all represent good qualities of the native drug.

Opium Smoking.

During the latter part of the nineteenth century, or since 1860, the luxury use of opium spread with appalling rapidity. Fifteen years ago, seventy times as much opium were used as that used in 1800. Annually twenty-two thousand tons of the drug were absorbed, most of it converted into thick smoke and inhaled by a legion of smokers estimated to number at least twenty-five millions. In Yunnan, the principal inquiry in matrimonial negotiations was, "How many opium pipes in the family?" this being a certain indication of its financial standing. Whole populations, including officials, gentry, students, merchants, and farmers had given themselves up to the seductive pipe and were sinking into a state of indescribable lethargy, misery and degradation. The pipe has a peculiar seduction for these people, because their lives are so bare of interest. The lack of indulgence in the innocent companionship of men and women which contributes such a charm to life is the chief cause which led the Chinese to such vice. They take it as a relief from the dreary flatness that results from sacrificing most of the things that make life interesting in the foolish endeavor to maintain the

largest possible number of human beings. Under their family system that tempts them to multiply without regard to prospects, they have pruned away much which lends value to life. Another cause is poverty. They often have so little food that any drug which removes first the pangs of hunger, and later the healthy cravings of appetite, seems a boon to them. In addition to this there is the feeling of peace and well-being that often accompanies the smoking of opium and it is not difficult to see why the indigent Chinese use it. It is for the same reason that the Western people administer morphine to relieve pain and weariness. The effect desired by the opium smoker is not that of slumber filled with fascinating dreams, but a condition of dreamy wakefulness in which the mind is lifted out of the petty annoyances and cares of life.

The prepared drug is called "Yen-kao" (smoke-extract) or "Shu-yen" (boiled-smoke), and is prepared by mixing the ashes from opium pipes with the raw opium, which facilitates the making of the infusion. This is further filtered and evaporated to the consistence of a thin extract, which is combustible in the opium-pipe when held in the flame of a small oil lamp. The opium is smoked from this special pipe, the stem of which is usually from 20 to 24 inches long, generally made of bamboo, at the lower third of which there is placed a bowl, usually of red clay, through which a minute hole runs down into the stem. The extract is usually made by the keepers of the opium-dens, but rich people usually make their own extract.

The amount smoked varies with various smokers. Kane gives the tabulated statement of the daily dose of 1,000 smokers; 646 varied between 16 and 128 grains; 250 from 160 to 320 grains; 104 from 480 to 1,600 grains. To obtain the desired effect 5 grains seem sufficient for a novice, while old smokers need as high as 290 grains. Among Americans this vice is of relatively recent origin and the average American seems to consume more than the average Chinese to obtain the desired effect.

The addiction to this habit varies somewhat with different individuals, and it seems that it depends a great deal upon the idiosyncrasy of the individual. However, after one has smoked a few times the habit becomes established. As a result of this, there is physical and moral deterioration, insomnia develops, sexual degeneracy supervenes, and there is lack of moral control. Some had smoked to the extent that they had Po-chia-shang-shen ("broken

up the home and destroyed the body"). The confirmed opium smoker is described as black-faced, weak-voiced, watery-eyed, brown-teethed, with prolapse of the bowels, and prospects of an early death.

One would naturally be surprised at the large doses quoted above, and that such did not produce death. As compared with the other forms of opium addiction, smoking takes longer time to form a real habit, works less physical and mental injury when once formed and is easier to cure. In smoking, the morphine is not all consumed and a large amount remains in the ash. Amounts of opium are smoked which, if taken by the mouth would certainly produce death. The burning of this extract in an incomplete manner, as practiced by the Chinese smokers, yields a smoke containing sundry empyreumatic compounds unknown to the chemists, but producing by absorption into the pulmonary vessels a stimulant, or some indescribable effect unknown to all but the actual smoker.

Though opium had been used as an analgesic to a certain extent, its place among the medicines is quite unimportant among the Chinese. Being a poison, it has been employed for suicidal purposes, and this is most common among women. When the crop is in the unhappy women who have been waiting for it (for women abhor a violent death) seize their opportunity. When the drug was at its highest point of abundance, such suicidal cases happened every day and everywhere, for that was the only poison within her reach when some poor woman thought to end her sorrows. However, the continual rise in the price and the restricted sale of opium have manifestly decreased the number of attempts at suicide by the taking of this drug.

On account of the prohibition, and the realization of the deadly effects of the poison, smokers began to seek means for getting rid of the habit. The failures were far more frequent than the cures, from the fact that it requires the exhibition of great will power on the part of those whose will power had already been weakened and partly enslaved. Tonics, stimulants, anti-opium pills, anti-opium tea, etc., have been put up by physicians and others to suit the purpose. Many of these did more harm than good, because they contained morphine which is a more severe narcotic. Thoughtful smokers with strong will power and self-control, have been successful in ridding themselves of the habit just by decreasing the doses day by day until there was a complete extinction of the opium.

However, the use of tonics and stimulants under careful supervision of a competent and conscientious physician, combined with the provision of good food for body and mind, with restraint and disciplinary measures in certain cases would greatly aid in curing the habit.

Suppression of the Poison.

The cultivation of the poppy which had been once spreading at an alarming rate, and the vice of opium-smoking which had been degrading the people with great rapidity, have come to the light of hopeful stoppage. The famous Anti-opium Edict issued by the Empress Dowager September 20, 1906, which commanded that the growth, sale, and consumption of opium should cease in the Empire within ten years was the opening gun in the most extensive warfare on this vicious private habit that the world has ever known. Since the Edict radiated from the apex of the governmental hierarchy at Peking, the higher officials were in general more vigorous in enforcing the Edict than the lower. In many cases viceroys and governors have been dismissed for lack of zeal, and new trusty men have been put in their places to put through this governmental policy. Along with these governmental forces, Anti-opium Societies sprang up, standing shoulder to shoulder with the government in the fight.

Because of the prohibition of poppy growing, most of the acreage was turned over to wheat and cotton cultivation, and it was a striking fact that in four of the great poppy growing provinces the prohibition was followed by a season of wonderful harvests. This shows that the sacrifice for the reform was well repaid. The wheat crop ran from 28 to 40 bushels to the acre. This and the restoration of so much land to food-growing have made food more plentiful and cheaper than ever before. New trades have sprung up, with the result that merchants who went out every summer to buy the drug are now trading in goat skins, donkey hides, pig bristles and human hair. In these provinces, Chinese experts in the agricultural schools are by their experiments showing the farmers that they can grow beets, potatoes and cotton instead of opium. In Fokien, cotton seeds were introduced from the United States Department of Agriculture for experimental planting in the fields once given over to poppy growing. Thanks to this, the production of cotton and wheat in China have been recently greatly increased.

As an earnest of its resolve to shake off its lethargy, and to make the Edict efficient, it was found necessary to clear the situation by establishing testing bureaus at Peking and the provincial capitals. The suspect was obliged to submit himself to a rigid test. After being searched for concealed opium, he was locked up for three days in a comfortable apartment and supplied with good food, but no opium. If he held out, he was given a clean bill of health, for no opium smoker can endure three days' separation from his pipe. By this means, certain highnesses were summarily cashiered. In the army both officers and common soldiers have been beheaded for obdurate indulgence.

With such a great and deep-rooted vice, aided by the continued importations from foreign countries, immediate stoppage was found impossible. Opium was allowed to be sold by licensed dealers to persons holding permits for some time. Such permits were issued only to those who proved to have the opium-smoking habit, and had to be posted outside the places where the opium was to be smoked. The smoker had to renew his permit every three months and a less amount was to be supplied each time. After buying the opium, he had to carry it through the street openly.

Under the coöperation of the Anti-opium Societies with the officials, the Edict was enforced with fruitful results. The societies collected and broke up paraphernalia seized in their raids or given up by reformed smokers. The stock on hand was from time to time stacked up in a public place and solemnly burned. In one of the burnings, the pipes, bowls, plates, lamps and opium boxes sacrificed by fire were upward of twenty-five thousand. In one city alone seven thousand dens have been closed. Thanks to these endeavors, the number of opium smokers has been remarkably decreased. Hardly any but low-class people now smoke opium. It has been estimated that between one and two million places for the smoking of opium have been removed. A national conscience has begun to show itself and the slave of the pipe has been put to the blush. The accomplishment during the ten years allowed for the cleansing of the land from the opium habit, as stated in the Edict, has surpassed all anticipations. The production of opium in the country has been cut down about 90 to 95 per cent. or almost entirely.

The finish of the poppy growing is in sight, but the imported Indian opium is the difficulty of the situation. In 1907 when the exports of Indian opium to China aggregated 3,400 tons, the British

Government agreed to reduce this total export at the rate of one tenth, or 340 tons, a year until 1911, with the assurance that the reduction would be continued in the same proportion beyond that period provided the Chinese Government had within the period cut down its home production in like degree.

In 1910, the Chinese Government desired to shorten the period of nearly eight years, during which India was to continue to send opium to China. The Chinese Senate and the Christian people of Great Britain in a series of most earnest resolutions appealed to the British Government to release China from her treaty obligations to receive Indian opium. The smoking people were likewise becoming very restive in seeing their little patches of opium destroyed while tons of the poison were permitted freely to enter Chinese ports.

In 1911, yielding to the accumulating pressure, England entered into an agreement with China whereby she consented to the imposition of a higher duty on opium, agreed not to convey opium to any province of China which had suppressed the cultivation and import of native opium, engaged to cut down exports of opium from India until the complete extinction of the trade in 1918, provided China kept up the suppression of opium growing.

The time for the entire suppression of the poppy growing within the country, and the complete extinction of the trade has expired. But the poison is still found in the hands of foreign dealers. In order to bring it to an immediate close, the government has been undertaking to burn all the opium stock, amounting to about $25,000,000, recently purchased of the foreign dealers and to issue a mandate for the immediate and complete suppression of the opium traffic throughout the country. The following statement, which is one of the resolutions of the Society for Constructive Endeavor of Shanghai (represented by more than fifty national organizations) on the subject of government destruction and suppression of opium, clearly indicates the public opinion and sentiment of the people:

"The Society has learned with profound satisfaction the decision of the government to burn all the opium stock recently purchased of foreign dealers, and to issue a mandate for the immediate and complete suppression of the opium traffic throughout China, and this decision recognizes and accords with unmistakable public sentiment against the revival of the opium traffic in any shape or form, and therefore merits and receives the full support of the public in-

terest and public conscience not only in China, but approved by enlightened minds the world over."

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QUERY: THE YEAR BOOK OR AN ABSTRACT JOURNAL, WHICH?[1]

ANSWER: BOTH.

By Joseph W. England, Ph.M.,

PHILADELPHIA, PA.

Your chairman has asked me to discuss the resolutions recently passed by the New York Branch, copy of which has been sent to the Philadelphia Branch, and I hesitate to do so because of my position as secretary of the executive committee of the Council; but since the question at issue is being publicly discussed, the following personal opinion is presented:

The resolutions of the New York Branch are, in brief, as follows:

"That the Executive Committee and Council take speedy action to submit the proposition of issuing either the *Year Book* or a monthly *Abstract Journal* to a vote of the membership of the Association in the form of a special postcard referendum, and that the postcard ballot give to each member the opportunity of voting on one of several options, such as, keeping the annual dues at $5.00, or raising them to $6.00, or to $7.50, each under certain specified conditions regarding the issuance or non-issuance of the publications of the Association."

The proposal of a referendum is not new. It was proposed at the New York meeting, both by the Association and by the Council.

[1] Read before the Philadelphia Branch, *A. Ph. A.*, November 11, 1919.

The Association first favored a referendum on an increase in dues. Later, the Council first decided for a referendum on an increase in dues with reference to the issuance or non-issuance of a monthly *Pharmaceutical Abstract Journal* or the *Year Book,* and the next day it reconsidered its action and referred the question to the Executive Committee for consideration and report to the Council. The minutes of this meeting of the Council were read at the final session of the Association (August 30) and amended by the Association as follows:

"That the Association reconsider its action in the matter of a referendum on an increase in dues, and that the question *in all its bearings* be referred to the newly created Executive Committee of the Council for investigation, and report to the Council for approval, and later, report its findings at the first general session of the Association next year." (*Journ. A. Ph. A.,* Oct., 1919, 848.)

"The minutes of the Council, as amended, were then approved." (*Journ, A. Ph. A.,* Oct., 1919, 848.)

Obviously, the Association having decided against a referendum on an increase in dues "in all its bearings," which includes the issuance of publications, it is hardly in order, now, for the Council or its Executive Committee to take a special postcard referendum on the subject and the question must await decision until the next annual meeting of the Association in 1920. The Council cannot supersede the Association.

Hence, it is not necessary to discuss the question of taking a referendum vote, but it is entirely in order to discuss the future of the *Year Book* and the proposition to replace it with a monthly *Abstract Journal.*

Personally, I believe that Mr. Gathercoal's suggestion of a monthly *Abstract Journal* has much to commend it. The pharmaceutical research workers of the Association are entitled to the promptest possible information of all developments in pharmaceutical research, but is it necessary to abandon the *Year Book* to give this?

R. W. Terry has suggested that the JOURNAL give, each month, a bibliography or list of titles of articles of current pharmaceutical literature, and H. V. Arny has suggested that the JOURNAL give an "Index Pharmaceuticus," or index of articles of current pharmaceutical literature; but why not give in the JOURNAL, monthly, a list of the titles of original articles of pharmaceutical periodicals, for-

eign and domestic, *together with the briefest possible description of their scope* analogous to the *Chemical Abstracts* of the American Chemical Society, but even briefer, and also, continue the publication of the present *Year Book?*

Such a procedure would be entirely practicable. The field of pharmaceutical research is comparatively limited and it would not take many pages of the JOURNAL, each month, to cover the field. It would be less expensive, also, to utilize the JOURNAL as the medium of expression, than to publish a separate periodical, while to the practical worker the manner of publication would be immaterial so long as he got the gist of the matter and could refer to the original promptly. Such a department of the JOURNAL could be called "Pharmaceutical Abstracts" or "Current Pharmaceutical Literature."

The function of a *Year Book* is radically different from that of an *Abstract Journal.* The object of the *Year Book* is to give an annual, systematic review or digest of pharmaceutical progress in orderly, logical sequence, fully and completely.

It is unthinkable that the *Year Book* be abandoned. It fills a niche occupied by no other book in pharmacy as a work of reference. For sixty-seven years, the Association has published its "Report on the Progress of Pharmacy" as contained in its former *Proceedings* and its present *Year Book,* and these volumes constitute the history of the development of American Pharmacy and give to the American Pharmaceutical Association a prestige that is international, as well as national.

The Association cannot afford to discontinue the publication of the *Year Book* which, under the able and brilliant editorship of H. V. Arny, our Reporter on the Progress of Pharmacy, is maintaining the highest traditions of the Association. Its continued publication is essential, not only for the sake of the pharmaceutical research workers of today, but also, as a duty the Association owes to posterity in furnishing a recorded history of the development of American Pharmacy.

The solution of the problem of the *Year Book vs.* an *Abstract Journal* would, therefore, seem to be to publish both—the former, as heretofore, and the latter as a department of the JOURNAL.

But the question arises: Can the Association afford the increased expense? And I am frank to say that I do not believe it can without increased revenue, but I do believe that increased rev-

enue can be readily gotten by sufficiently increased membership, provided the present system of annual dues, which is the same today as it was in 1852 when the Association was founded, be properly modified.

As a matter of fact, the question of the finances of the Association is the crux of the whole situation. In the first place, it should be stated that the finances of the Association are in excellent shape —they have never been better, but the expenses of the Association are constantly increasing.

In common with individuals everywhere, the Association has felt the pinch of the high cost of living, and its activities have been restricted, instead of being expanded, as they should be. As President LaWall has said, "There is no question as to the value of our organization to the majority of the members who belong to it. There is no doubt either, as to the great increase in the overhead costs to the Association, and if things continue in the same proportion, we shall soon have a deficit in the treasury."

It may be of interest to state that, during 1918, the receipts of the Association, excluding those belonging to the A. Ph. A. Research Fund (which were covered into the Fund on January 1, 1919) and the interest on investments, were but slightly in excess of the disbursements; there was no deficit.

Of these receipts about 60 per cent. came from the annual dues of members, about 25 per cent. from *Journal* advertisements and about 10 per cent. from the National Formulary, and the balance from other sources.

If the receipts from interest and other sources be taken into consideration, the Association may be said to be in excellent financial condition; but the point is that *there is a positive need for more revenue if the Association is to do the kind and volume of work it must do to progress.*

A largely increased membership is most desirable, not only because it will mean increased revenue and relatively less "overhead expense," but also, because it will make the Association more fully representative of American Pharmacy, give it greater influence and prestige, and enable it to better promote the objects for which it stands. Hence, the necessity for "a nation-wide, intensive drive for increased membership, utilizing every agency at the command of the Association, but all working under one head," as suggested by E. L. Newcomb. Such a drive should be, of course, "modern, strongly

organized, efficiently managed and adequately financed," and also, along broad, comprehensive lines and in close coöperation with the State Associations (on the 51 per cent. basis plan recently adopted) and the War Veteran's Section.

But something more is needed. What the Association needs today, most of all, it seems to me, is an entire revision of its system of membership so that *the dues shall be graded by the cost of the service rendered to each member.*

For example, I do not believe that the 3,000 members of the Association want or use the Year Book; hence, every book printed and distributed in excess of those needed is just so much money needlessly wasted. Why print 3,000 books and waste, say 2,000? Why not require the 1,000 who want the book to pay, say $2.50 each for it? By so doing, the book would cost the Association nothing, and the Association would save several thousands a year.

It may be claimed that the membership can be increased to a point where the present dues of $5.00 would pay for all that is now given for that amount, because with increased membership the relative overhead expense would be "cut" and more net revenue obtained; but the difficulty is that the present *fixed* cost of each member (and this is constantly rising) is so high, that an exceedingly large number of new members would have to be gotten to yield the revenue desired, and this is improbable. On the other hand, if the annual dues are increased to $7.50 for *all* members for *all* publications, as proposed, many will resign and fewer new members will be gotten than could be otherwise.

The logic of the situation, therefore, suggests that the Association establish several classes of members, as follows:

1. Members or Active Members who will pay $5.00 dues and receive the JOURNAL only.

2. Contributing Members who will pay $7.50 dues and receive both the JOURNAL and the *Year Book.*

3. Corporation Members who will pay $25.00 dues and receive special services in the way of information, reprints, etc. (similar to that offered by the American Chemical Society).

4. Associate Members who will pay $3.00 and receive no publications; this could include drug clerks, soldier and sailor pharmacists, etc., who wish affiliation for prestige only.

Some such plan as this would be modern and businesslike. It would mean a square deal both for the membership and the Associa-

tion. Each member would get only what he wants and is willing to pay for, and the Association would get what it pays for the service it renders to its members; and would have a reasonable sum of money for expense that would permit an expansion of its activities limited only by the size of its membership.

But, as you know, the whole question of annual dues, finances, membership, etc., is now in the hands of the Executive Committee for consideration and report to the Council (and later to the Association) and I feel that I am but expressing the wishes of the Committee when I say that the latter will gladly welcome any and all suggestions reflecting the wishes of the membership to the end that the fullest light may be had on the subject, and a satisfactory decision reached.

THE STATUS OF LEGISLATION BEARING UPON MILITARY PHARMACISTS.

By E. Fullerton Cook, Ph.M.,

Philadelphia, Pa., Secretary N. P. S. A.

The Surgeon-Generals Ask for Commissions for Pharmacists.

During the meeting of the American Pharmaceutical Association in New York, a letter from the Surgeon-General of the United States Army, Dr. Ireland, was read, in which he announced his intention of asking for the organization of a Medical Service Corps for the United States Army and agreed to provide a limited number of commissions for pharmacists in this corps. Carrying out this promise, Dr. Ireland appeared before the Committee on Military Affairs of the House of Representatives on October 3, and after presenting the need of a service corps, was asked to draft a bill which would supply this need. In speaking before the Committee, Dr. Ireland said:

"I would like to have a few minutes to put up a proposition which I believe is greatly in the interest of the efficiency of the Medical Department. This could be accomplished without expense. For some time we have needed a service corps. During the Civil War field hospitals and ambulances were authorized along about 1862, and at that time by act of Congress and by order of the War Department line officers could be detailed to act as our quarter-

masters at our general hospital and as commanders of ambulance companies. They did work of a nonprofessional character. It is needless for me to tell the committee that the quality of officers we want to do that work will not come to the Medical Department in time of active operation. They, of course, want to remain with their command. That has resulted in the medical officers commanding the ambulance companies, having charge of our transportation, acting as adjutants of our hospitals, being the quartermasters or property officers or mess officers in our large institutions.

"It has taken an enormous number of these highly trained medical officers for nonprofessional work, which is a great wastage of material, as they ought to be taking care of the sick and doing professional work. We would like to make enlistment in the Medical Corps popular by offering men a commission, after five years' service, in a service corps. They must come in the Medical Department and serve as enlisted men for five years, and at least three years of that time should be in the grade of noncommissioned officer, indicative that they have made good as enlisted men. After a certain length of time they could be examined under regulations prescribed by the Secretary of War, and commissioned in the service corps. They would be our adjutants, property officers, mess officers, pharmacists, and perform all such nonprofessional work. The Medical Corps is willing to give up officers in the grade of major, captain, and first lieutenant sufficient to organize that corps. We ask for one service corps man for every two thousand enlisted men, and we will give up enough of our seven-tenths of 1 per cent. of medical officers in the Medical Corps to organize that service corps. That would make enlistment in the Medical Corps very attractive. It provides a future for the enlisted man.

It would solve another problem which has bothered the department for a long time. There is some need for pharmacists in the United States Army. They have them in the Navy. They have a pharmaceutical corps. There is not a sufficient need to organize a phrmaceutical corps in the Army, but if we have a service corps we would take care of a certain number of pharmacists in that service corps."

The chairman of the Committee then asked: "That statement that there is no need for a pharmaceutical corps in the Army is not admitted by the pharmacists, is it, General?"

General Ireland replied: "I think they believe, and have believed

for many years, and have insisted for many years, that we should have pharmacists in the Medical Department; but I have had a talk with the pharmacists, and they have agreed that if we can secure a service corps and will give them a limited number of pharmacists, they will accept that and be satisfied. I believe the pharmacists of the country will accede to what I have said."

Dr. Ireland subsequently presented the following plan:

"ARMY REORGANIZATION—PROPOSED SECTION RELATING TO MEDICAL SERVICE CORPS.

"A Medical Service Corps is hereby established, which shall be a part of the Medical Department, and shall consist of a commissioned force and an enlisted force.

"The commissioned force of the Medical Service Corps shall consist of officers, the total number of whom shall approximately be equal to one for every 2,000 of the total enlisted strength of the Regular Army authorized from time to time by law, and shall be distributed by grades as follows: Majors, 25 per cent.; captains, and first lieutenants, 75 per cent.: Provided, That if by reason of a reduction by law of the authorized enlisted strength of the Regular Army the total number of officers in the Medical Service Corps commissioned previously to such reduction shall for the time being exceed the equivalent of one for 2,000 of such reduced enlisted strength, the total number of said officers shall be reduced to said equivalent in the manner prescribed by the first proviso of section 10 of the National Defense Act approved June 3, 1916 (39 Statutes at Large 166), respecting the Medical Corps: Provided further, That the number of majors in the Medical Corps authorized by section 10, of the National Defense Act, approved June 3, 1916 (39 Statutes at Large 166), shall be diminished by the number of majors in the Medical Service Corps, and the number of captains and first lieutenants in the Medical Corps shall be diminished by the number of captains and first lieutenants in the Medical Service Corps: Provided, however, That nothing in the last preceding proviso shall be held or construed so as to discharge any officer from the Medical Corps of the Regular Army or to deprive him of the commission which he now holds therein.

"The officers of the Medical Service Corps shall be utilized so far as practicable in the performance of the business and adminis-

trative functions of the Medical Department, to wit, as adjutants of Medical Department units, registrars of hospitals, pharmacists, medical property and supply officers, medical finance officers, hospital mess officers and in other positions where the special professional training of medical officers is not required.

"The officers of the Medical Service Corps shall be appointed by the President, by and with the advice and consent of the Senate, from among the noncommissioned officers of the Medical Service Corps and of the Veterinary Corps who shall have served not less than five years in one or both of said corps, including service in the Hospital Corps and in the enlisted force of the Medical Department, and not less than three years in noncommissioned grades, who shall at the date of appointment be citizens of the United States and not more than thirty-two years old, and who shall have been found qualified by a board of not less than three officers of the Medical Department for the duties of commissioned officers of the Medical Service Corps upon such examination as shall be prescribed by the Secretary of War: Provided, That persons who, having previously been enlisted men in the Medical Department of the Army for not less than five years, shall have served honorably as commissioned officers in the Army of the United States during the war with Germany, shall until July 1, 1920, be eligible regardless of age for appointment to original vacancies in any grade in the Medical Service Corps created by this section.

"The enlisted force of the Medical Department is hereby merged into the Medical Service Corps, and from and after the passage of this act shall constitute and be known as the enlisted force thereof. The total strength of the enlisted force of the Medical Service Corps shall be approximately equal to, but not exceed, except as provided in section 10 of the national defense act approved June 3, 1916 (39 Stat. L., 166), the equivalent of 5¼ per cent. of the total enlisted strength of the Regular Army authorized from time to time by law, and shall include the grades of chauffeur and wagoner. Chauffeurs and stable sergeants of the Medical Service Corps shall have the same rank, pay, and allowances as sergeants of the Medical Service Corps, and wagoners the same pay and allowances as wagoners of Infantry. Privates first class of the Medical Service Corps shall be eligible for ratings as surgical assistants, laboratory assistant, X-ray assistant, dispensary assistant, dental assistant, or nurse, each at $5 a month: Provided, That no enlisted man shall receive more than

one rating for additional pay under the provisions of this section, nor shall any enlisted man receive any additional pay under such rating unless he shall have actually performed the duties for which he shall be rated.

"Except as hereinbefore provided, original appointments in the commissioned force of the Medical Service Corps shall be in the grade of first lieutenant, and first lieutenants shall, subject to the prescribed examination, be promoted to the grade of captain after five years' service in the commissioned force of the Medical Service Corps: Provided, however, That the period during which any first lieutenant of the Medical Service Corps shall have served between April 6, 1917, and July 1, 1920, as a commissioned officer in the Army of the United States, shall be counted as a portion of the period of service required to make him eligible for promotion to the grade of captain.

"Except as hereinbefore provided, the laws governing promotion in the Medical Corps shall so far as applicable govern promotion in the commissioned force of the Medical Service Corps.

"Officers of the Medical Service Corps shall exercise command only in their own corps: Provided, That nothing in this act or any other law shall be held to deny or abridge the right of officers of the Medical Corps to exercise command in and over the Medical Service Corps."

It is understood that Dr. Ireland also presented this plan to the general staff and received their approval and it is confidently believed therefore, that it will be embodied in the bill for Army reorganization when that is presented in Congress.

The Surgeon-General of the Navy, Dr. Braisted, has also strongly endorsed the principles embodied in the Darrow Bill, which is to provide permanent commissions for members of the Hospital Corps, up to the rank of Lieutenant Commander. A committee from the American Pharmaceutical Association and one from the National Pharmaceutical Service Association, presented this bill to Secretary Daniels in October and it is known that he has given it careful consideration and has been in conference with the Surgeon-General. The Army and Navy officials are endeavoring to coöperate in the establishment of these organizations, and the Hospital Corps of the Navy and the Medical Service Corps of the Army would practically embrace the same class of activities.

Pharmacy proper would be but one phase of the various duties

required in either organization. The filling of prescriptions and the manufacture of preparations may become a part of the duty of any member of the corps, who is properly qualified, but in addition to this, as has been explained in a number of articles appearing during the war, the members of the Hospital Corps are expected to qualify for the buying of supplies, including not only drugs, but every kind of supply for hospitals, such as food, equipment, and materials for surgical work. They are required to be first-aid men, chemists, bacteriologists, X-ray experts, stenographers, bookkeepers, commissary experts, executives, and competent aids in every department of the medical service. The question whether this work is called professional need not concern pharmacists. Much of it we know is work of which pharmacy may be proud and which does require scientific training and is properly classed as professional, but other work required by the Corps will be nonprofessional. This has been done in the past by the medical officers, who are conceded to be professional men, but the doctors did not change the work to professional work, nor can it be changed in the future. Without question, the pharmacist will be given credit for the professional work he does, as it is now conceded by the medical men of the Navy, and his standing will not be injured by the nonprofessional work required.

If both the bill proposed by Dr. Ireland and the Darrow Bill become laws, a pharmaceutical organization will be built up which will have a counterpart in the reserve corps and in these civil pharmacists will have an opportunity to enlist and receive training, and can advance as reserve officers, so that should war again occur, the reserve officers of the Hospital Corps and of the Medical Service Corps of the Army would in line for rapid promotion. It is within the jurisdiction of the Surgeon-Generals of both branches of the military service to give recognition for technical training received outside of the Army or Navy.

While it is not known just what recognition will be given graduate pharmacists in these corps, there are hundreds of cases on record in the Navy where a graduate pharmacist has advanced in eighteen months to Chief Pharmacist's Mate with the pay of about $100 a month and all living expenses in addition. A similar opportunity will no doubt be provided in the Army and although five years of service is a requirement in the bill before commissions are granted, exceptions can be made if found practicable through a ruling of the Surgeon-Generals, as has been done in the past. It must not be

overlooked, however, that many other qualifications are necessary in addition to a technical pharmaceutical training and among these the personal qualities are important. The ability to assume command and administer an important office, becomes a prime requisite for advance.

The situation at least is encouraging and with this start, pharmacy will have every opportunity to develop in the work of the Army and the Navy during the years ahead and we believe that it can thoroughly demonstrate its importance and efficiency and that we need never again be ashamed of the place held by pharmacy in either branch of the service.

If these bills are reported favorably to Congress, ask your Congressman to give it support, and a united pharmacy at this time will be necessary to the completion of this programme and secure the recognition of pharmacy in our military organizations.

MISCELLANEOUS MINERALOGICAL NOTES.

By George E. Ewe,

PHILADELPHIA, PA.

Analysis of a Potter's Clay Offered for Pharmaceutical Purposes.

Potter's clay is a very fine, dry, smooth, grayish powder. It is employed, pharmaceutically, chiefly in the manufacture of dusting powders for use in treating chafing of the skin.

One specimen yielded the following analysis:

	Per Cent.
SiO_2	45.25
Fe_2O_3	3.03
Al_2O_3	34.47
CaO	none
SO_3	none
MgO	0.99
Loss upon ignition	11.41
$Na_2O + K_2O$ (by diff.)	5.85
Total	100.00

Analyses of 3 sericitic schists from Southern United States:

		Per Cent.
No. 1.	SiO_2	47.10
	Fe_2O_3 plus Al_2O_3	38.00
	CaO	0.10
	K_2O	10.94
	Na_2O	3.41
	H_2O	1.65
	Total	101.20

		Per Cent.
No. 2.	SiO_2	46.90
	Fe_2O_3 plus Al_2O_3	37.30
	CaO	0.10
	K_2O	11.43
	Na_2O	3.81
	H_2O	0.78
	Total	100.32

		Per Cent.
No. 3.	SiO_2	45.65
	Fe_2O_3 plus Al_2O_3	40.30
	CaO	1.45
	K_2O	11.69
	Na_2O	3.61
	H_2O	none
	Total	102.70

Serecitic Schist No. 3 was powdered and rendered anhydrous by gentle ignition before analysis. This schist yielded 82.9 per cent. of its total K_2O by the following process:

Twice the calculated amount of sulphuric acid theoretically required to combine with the Fe_2O_3, Al_2O_3, CaO and Na_2O was added to the powdered mineral and sufficient water was added to reduce the strength of the acid to approx. 30 per cent. absolute H_2SO_4 by weight. The mixture was heated with stirring for about 8 hours on a boiling water bath, then permitted to stand at room temperature over night. This procedure rendered 44.9 per cent. of the total K_2O soluble.

A second exactly similar treatment applied to the insoluble residue from the first extraction rendered still more of the total K_2O soluble. The total amount of the K_2O thus rendered soluble by the two extractions was 82.9 per cent. of that originally present.

ANALYSIS OF A FELDSPAR FROM VIRGINIA.—

	Per Cent.
SiO_2	64.69
Fe_2O_3 plus Al_2O_3	19.93
CaO	0.31
K_2O	13.32
Na_2O	2.83
H_2O	none
Total	101.08

Note.—This mineral had been ground and rendered anhydrous by gentle ignition before assay.

EXAMINATION OF A NEPHELITE FROM MAGNET COVE, ARKANSAS.—

K_2O ..... $\left\{\begin{matrix}3.28\\3.25\end{matrix}\right\}$ ave. 3.265 per cent.

Na_2O ..... $\left\{\begin{matrix}9.978\\9.968\end{matrix}\right\}$ ave. 9.973 per cent.

GEYSER INCRUSTATION FROM WESTERN UNITED STATES.—This incrustration contained white patches of potassium nitrate.

SPANISH BROWN, BURNT UMBER AND BURNT SIENNA.—These are ferruginous earths, the iron being in various stages of oxidation with resultant variation in the colors of the earths. These earths are used to some extent in pharmaceutical preparations for which purpose freedom from arsenic and heavy metals, other than iron, is essential. Numerous lots of these earths were examined during the past few years and in no case were heavy metals, other than iron, found. Arsenic is frequently found, however, although not often in excessive quantities. The arsenic amounts as high as 1 part in 1,000 in some specimens. This is excessive. Only those earths in which the arsenic is present to the extent of not more than 1 part in 50,000 parts should be offered to the pharmaceutical trade and preferably the arsenic should not be greater than 1 part in 100,000 parts, which is the amount permitted in medicinal substances by the United States Pharmacopoeia.

ANALYSIS OF A TRIPOLI FROM WESTERN UNITED STATES.—This tripoli was very white, friable, and easily reducible to an excellent polishing powder.

		Per Cent.
Analysis:	SiO_2	99.14
	$Fe_2O_3 + Al_2O_3$	0.48
	H_2O	0.27
	Total	99.89

FULLER'S EARTH.—This mineral is used to some extent in pharmaceutical preparations. The most objectionable impurities are heavy metals, other than iron, and arsenic.

Among the many samples examined by these laboratories during the past few years, none has been found to contain heavy metals, other than iron, and while many contained traces of arsenic, none contained this impurity in greater excess than the limit of 1 part in 100,000 parts allowed by the U. S. P. for medicinal substances.

"TERRA ALBA."—Undoubtedly this name originally was limited in its application, to white clay, but this is not now the case. During the past three or four years a white, non-setting calcium sulphate has been uniformly supplied upon orders for "Terra Alba." Previous to the past three or four years, either a white clay or a white, non-setting calcium sulphate was supplied.

For purposes of uniformity, it would be desirable for the heavy chemical trade to adopt a standard for "Terra Alba" or supply the "Terra Alba" with qualifying statements as to its chemical nature.

LABORATORIES OF H. K. MULFORD COMPANY,
PHILADELPHIA, PA.

THE TINCTURE OF VANILLA OF THE NATIONAL FORMULARY.[1]

BY BERNARD H. SMITH.

Tincture of vanilla was discontinued in the ninth edition of the Pharmacopœia, being transferred to the fourth edition of the National Formulary. The method of the eighth edition of the Pharmacopœia called for the use of 65 per cent. alcohol, which is generally recognized as being higher than is necessary to produce the best vanilla extract, but otherwise the procedure was practicable and workable. The same cannot be said of the substituted method, which is as follows:

TINCTURE OF VANILLA.
(U. S. P. VIII.)
Tr. Vanill.

Vanilla, cut into small pieces, one hundred grams	100 Gm.
Sugar, in coarse granules, two hundred grams	200 Gm.
Alcohol	—
Diluted alcohol	—
Water, each a sufficient quantity	—
To make one thousand millimeters	1000 mils.

[1] *The Jour. of Industrial and Engr. Chem.*, Oct., 1919.

Macerate the vanilla with five hundred milliliters of alcohol in a stoppered container, in a moderately warm place, for two days with frequent agitation; then transfer it to a plain filter and reserve the filtered liquid. Spread out the drug on the filter and expose it to the air until all of the alcohol has evaporated. Then grind the vanilla and sugar to a uniform powder, pack this in a percolator and slowly percolate it with a mixture of the reserved filtrate and an equal volume of water. When the liquid ceases to drop, continue the percolation slowly, gradually adding the remainder of the prepared menstruum and then sufficient diluted alcohol to make the product measure 1,000 milliliters.

It will be noticed that the new method calls for a preliminary extraction with alcohol which contains not less than 94.9 per cent. of alcohol by volume; in other words, "Cologne spirits" of commerce. Alcohol of this strength removes a resinous extractive from the beans which is precipitated in the form of a persistent cloud when the menstruum is diluted and which is not subsequently removed by percolation or by any ordinary method of filtration. This colloidal material adds nothing to the flavor of the extract, but on the other hand renders it unsightly and unsalable.

Another obvious disadvantage of the proposed method is the loss of alcohol which its use entails. Vanilla beans of average moisture content will retain 10 per cent. of the alcohol used when placed upon a filter to drain, which is lost if the directions are followed to expose the drug "to the air until all of the alcohol has evaporated."

The method would seem to be of greater academic interest than of practical value, which is unfortunate, inasmuch as the authorities having the enforcement of the food and drug laws in charge naturally attach great importance to official methods of procedure.—Baker Extract Co., Springfield, Mass.

Editorial Comment.—The statements made in this paper which we reprint should not be permitted to go unchallenged. As one who, on many occasions, has employed the process of the National Formulary for the manufacture of Tincture of Vanilla, the writer is prepared to assert that this formula yields with vanilla of a satisfactory quality a product that is not only clear but that likewise complies with the standard requirements.

It is a fact well known among vanilla dealers and extract manu-

facturers that certain commercial varieties of vanilla are exceedingly difficult to manipulate and no matter what process may be used in the extraction the tincture of vanilla produced is more or less cloudy and must be clarified by subsequent manipulation. With vanilla of a satisfactory quality, the cloudy menstruum produced by diluting the reserved filtrate with an equal volume of water as directed in the N. F. formula, usually comes through as a clear percolate clarified in the process of percolation. Occasionally, it may be necessary to return the first portion of percolate until it does come through clear.

The criticism that the process as given wastes a portion of the alcohol is well founded, and doubtless every manufacturer of the tincture on a sufficient scale to justify the expense will adopt appropriate means to overcome this loss. The purpose of the formula is apparently to supply to the pharmacist, or others making the tincture on a small scale or in the quantity directed in the Formulary, a method of reducing the vanilla to the degree of fineness of powder required by the process of percolation directed. The powdering of the vanilla by itself, or in the original condition with the sugar directed, is impracticable, hence the manipulation directed. Even with this loss of alcohol, the pharmacist may be compensated by saving the manufacturer's profit and by the knowledge that he is dispensing a standard, reliable product.

The author of the paper has overlooked the fact that both the U. S. P. and N. F. establish standards for products and that each contain special notices permitting manufacturers of preparations on the large scale to deviate from the processes given provided the finished products conform to the official standards. The special notice on page XXXVIII of the N. F. Fourth Edition is intended to cover just such a condition as has occurred in the manufacture of tincture of vanilla. For the benefit of some manufacturers who may have overlooked this paragraph it is reprinted here:

"*Directions for Mixing or Manufacturing.*—Under most of the formulas are directions for manipulation to obtain the desired product. These directions have been found convenient and practicable for the quantities directed, and may apply in case of larger or smaller quantities. But such directions admit of deviations which may be more economical or convenient for manufacturing, and changes in the methods are permissible *provided the final product*

corresponds in all respects with the one produced by the method given."

"Deviations in the formula which result in a change in the composition of the final product are not permissible."

GEORGE M. BERINGER.

DEVELOPMENT OF REUNION'S VANILLA INDUSTRY (TIMES TRADE SUPPLEMENT).[1]

Reunion Island, a French colony a day's journey from Mauritius, and larger than the latter colony but with a small population, has suffered considerably from the war. In ordinary times its trade, which is mostly with Mauritius, Madagascar, and France, amounts to some 30,000,000 francs (say $6,000,000) annually. Of late years this trade has been greatly reduced.

The island, all the same, holds its own as one of the greatest vanilla-producing countries in the world, and steps are being taken to improve the industry in view of the greater demands for the staple. Experts from Reunion have recently been visiting Mauritius to endeavor to secure capital for the development of their plantations, for the introduction of improved machinery on their estates, and to arrange for new, practical methods in packing their produce. As the Mauritian planters have large sums of money in hand, due to the high prices which, during the last five years, they have secured for their sugar, they have given a ready response to the appeal for capital from the Reunion colonists, and the prospects of the vanilla industry there are are looking much brighter.

BENZINE POISONING, WITH REPORT OF A CHRONIC CASE.[1]

BY RUSSELL L. HADEN, M.D.,

DETROIT, MICH.

Benzine rarely causes poisoning, although it is largely used in the industrial world, especially for vulcanizing rubber, driving motors, cleaning, and as a drier in paints. Poisoning may be caused by

[1] From *Commerce Reports*, Oct. 10, 1919.

[1] Reprinted from *Johns Hopkins Hospital Bulletin*, October, 1919.

either drinking or inhaling large amounts of the substance. The absorption of small quantities seldom produces ill effects.

Benzine is a product of petroleum. It is not to be confused with benzene or benzol which is obtained by the fractional distillation of coal tar. It is not a chemically pure body, but consists of that part of petroleum which distills over between 70° and 90° C. The mixture is made up of hydrocarbons of the general formula C_nH_{2n+2}, but consists principally of hexane, H_6H_{14}, and heptane, C_7H_{16}.

Numerous experiments have been made to determine the physiologic and toxic effects of benzine. Lehman[2] found that the inhalation of fumes by animals caused an irritation of the respiratory mucosa, muscular twitchings, and a slowly increasing narcosis. Felix[2] experimented on prisoners in Bucharest, administering benzine as one would chloroform for anesthesia. Small doses produced nausea, smarting of the conjunctivæ, and, in some cases, burning in the chest and drowsiness. Larger doses caused sleep and anesthesia, succeeded by nausea, vomiting, headache, dizziness, depression, and drowsiness. Montalti,[3] after the internal administration of certain quantities, noted vomiting, uncomfortable feelings in the stomach, difficult breathing, miosis, muscle tremors, and symptoms of paralysis of the central nervous system. He concluded that gastrointestinal and cerebral toxic symptoms are characteristic for benzine intoxication. The action he thought to be due to the affinity of benzine for the fat, cholesterin, and lecithin group, which causes a change in the ganglion cells.

Hamilton[4] interviewed nine interior house-painters who had experienced the effects of using a quick-drying paint containing large quantities of benzine in small and practically unventilated rooms. Dizziness, headache, spots before the eyes, dryness with choking in the throat, and burning of the eyelids were complained of by all, while some also had nausea, vomiting, pains in various parts of the abdomen, and dysuria. In several instances the worst discomfort developed on leaving work, the dizziness and staggering coming on in the open air.

A number of cases of acute poisoning are recorded in the literature; some in children who had drunk the benzine, while others had

[2] Quoted by Zornlaib: *Wien. Med. Wchnschr.*, 1906, LVI, 366.

[3] Quoted by Hamilton.

[4] Hamilton, Kober and Hanson: "Diseases of Occupation and Vocational Hygiene," Philadelphia, 1916.

resulted from inhaling large amounts of the fumes, usually in cleaning tanks or vats in which there was very little ventilation. The symptoms noted as resulting from poisoning from drinking benzine have been cyanosis, miosis, weak pulse, unconsciousness, and convulsions. Friediger[5] has collected 14 cases of poisoning by it, eight of which resulted in death. The fatal cases were all in children. Autopsy in all cases showed hemorrhages into the lungs.

The most prominent symptom in all cases of acute poisoning from the inhalation of fumes, according to Wichern,[6] is the muscle tremor which may take the form of tonic or clonic cramps, the victims remaining almost without interruption in a condition of shaking fit. Wichern describes two cases: A workman was overcome by the fumes and fell into a tank of benzine. He was unconscious and showed wide, inactive pupils, spasticity, acrocyanosis, chills, and vomiting. In a second case, developing in a cleaning establishment, the symptoms were similar. Wichern states that in animal experiments muscle tremor is prominent also. Other observers have reported cases similar to those of Wichern. Peters[7] describes the occurrence of retrobulbar neuritis in a girl of fourteen, the daughter of a glove-cleaner, who was addicted to the habit of inhaling benzine. The child was apathetic, stubborn, and learned slowly.

Chronic benzine poisoning seems to be of rare occurrence. According to Hamilton, ordinary workmen in American oil fields and refineries show no ill effects. Russian writers state that much ill health is caused by the constant inhalation of benzine fumes in establishments where the working conditions are bad. Only four cases of chronic poisoning are to be found in the literature, all occurring in a rubber factory, and two of which are reported in detail by Dorendorf.[8] The first man after eight months in the factory began to have tearing pains in the muscles and joints of the extremities. Later he suffered from fibrillary twitching and a fine tremor of the hands. After a rest he went back to work. Sixteen months later he returned to the hospital complaining of pressure in the head, weak memory, difficulty in speaking, anorexia, a feeling of heaviness in the limbs, and a feeling of cold in the right hand and leg. Examination showed psychic depression, hesitant speech, weakness

[5] Friediger: *Münch. med. Wchnschr.*, 1912, LIX, 252.
[6] Wichern: *Münch. med. Wchnschr.*, 1909, LVI, 2.
[7] Peters: *Deut. med. Wchnschr.*, 1900, XXVI, 249.
[8] Dorendorf: *Münch. med. Wchnschr.*, 1901, XLVIII, 236.

of the right hand, hyperactive knee reflexes, and active tremor of the tongue, eyelids, and hand. The blood was normal except for the presence of free pigment. The second man was a worker in the vulcanizing room. A few weeks after beginning work he lost his appetite, he began to suffer from constipation, later from diarrhea, and finally from vomiting. He complained of headache and insomnia and had to stop work on account of colicky pains. He also had drawing pains in both arms and a sense of a leaden weight in the right arm with a feeling of coldness and formication. Examination showed the knee reflexes to be much increased and there was an after-tremor of the knee tendon. Striking the patella tendon evoked a contraction of the epigastric muscles and diaphragm. There was also tremor of the hands and tongue. Free pigment was found in the blood plasma, as in the first case. Dorendorf states that two other men were found in the same factory presenting similar symptoms. He allowed guinea-pigs to breathe the fumes of benzine daily and found that they developed paresis and died in convulsions in fifteen days.

The following case has been observed by us at The Johns Hopkins Hospital:

J. H. N., a white man, age forty-two, by occupation a cleaner in a lithographing factory, was admitted to the hospital October 4, 1915, complaining of weakness and dizziness.

Family History: His father and four brothers died of pulmonary tuberculosis, but the patient has not been associated with his family for twenty-five years.

Previous Personal History: The general health has been good up to two years ago. He had pneumonia at twenty-eight and malaria twice yearly for ten years. He has not had an attack of malaria for the past eight years. During the past four years he has had at times severe night sweats with cough lasting for three to four weeks. The last attack occurred two weeks before admission. He has never been jaundiced until his present illness. He had dysentery with blood and mucus in the stolls in Cuba in 1897. Three years ago his appendix was removed and his right kidney suspended. For eleven years previous to this operation he had had attacks of adominal pain with a sensation of a sliding mass in the abdomen.

Present Illness: The patient states that he has not been strong since the operation, but in July, 1914, he felt fairly well except for some weakness. Two months after beginning his present work he

began to have generalized pains over his abdomen with nausea and vomiting after meals. He also had a feeling in his head which he describes as a "compression on the inside" or a "pressing-in like." On October 1, 1914, he went to a hospital. At this time he also had a feeling of heaviness in the arms and legs, which made them feel like leaden weights. These symptoms cleared up, but on going back to work the nausea, vomiting, and dizziness returned and have become progressively worse. The nausea and dizziness have often been so severe that he has had to leave work. He has been gradually losing strength, the weakness before admission being so extreme that it often took an hour to walk to his home when it had ordinarily required only twelve minutes. At times he has fallen in the street. For the past three months he has been getting drowsy, his memory has been failing, and he has had difficulty in thinking. He has had a feeling of coldness in his legs for the past two months, which he describes as a feeling "as if menthol were rubbed on them." He has had shooting pains in the arms with cramp in the muscles ending in hyper-extension of the fingers. Recently he has had spontaneous cramps of other muscles. His legs felt as if "a thousand needles were stuck in them." The sense of heaviness of the limbs continued until they felt like "bags of cement." He has noticed, also, tremor of the fingers and eyelids and failing memory; his head has not felt clear, and the left ear as if bubbles were flowing out of it. During all this time the nausea, vomiting, dizziness, and weakness have been progressive. He has had some dimness of vision. Five weeks before entering the hospital he noticed that his urine was becoming dark. Two days ago someone told him that he was jaundiced. He has had marked anorexia and constipation.

Physical Examination: The patient is undernourished and looks sick. He is very dull mentally, and answers questions slowly. There is well-marked jaundice of the skin and mucous membranes. There is a sweetish odor to the breath. The pupils are equal and active. There is no glandular enlargement. There are signs of fibroid changes at both apices. The heart is negative. Blood pressure 100/65. The liver edge extends two finger-breadths below the costal margin and is firm and tender. The spleen is palpable. The tendon reflexes are very active everywhere, but equal on the two sides. When the patella tendon on one side is struck there is a contraction of the thigh muscles on the opposite side. The super-

ficial reflexes are present. Babinski and Oppenheim negative. There is no clonus; sensory examination is negative.

Laboratory Examination: Wassermann (blood) negative. Sputum negative for tubercle bacilli. The urine had a specific gravity of 1,022 and was negative throughout except for an occasional trace of albumin and a positive bile test on admission. Blood (October 6): R. B. C., 4,332,000; W. B. C., 4550; Hb., 77 per cent.; differential: P. M. N., 54.6 per cent.; P. M. E., 2.6 per cent.; S. M., 33.3 per cent.; L. M., 5.0 per cent.; trans., 3.0 per cent.; unclassified, 1.3 per cent. Gastric analysis: Free HCL, 44 per cent., and total acidity, 72 per cent. The stool was dark brown and gave a positive bile test. There were no parasites or ova. On October 8 the white blood cells were 5,400. A Calmette tuberculin test was negative with 1 per cent. and 5 per cent. Four other blood counts showed the white blood cells to be below 5,000. A second test meal was given with the same findings as in the first. On November 23 the white cells had risen to 7,280.

Course in Hospital: The symptoms rapidly disappeared. The reflexes continued active for a long while. At times striking the patella tendon would cause a contraction of nearly all the larger muscle groups. The jaundice and cyanosis cleared up. He gained weight rapidly and no longer had difficulty in thinking. He was discharged from the hospital November 23, 1915. At this time the reflexes were moderately exaggerated. Examination otherwise was negative. When seen several months later there had been no return of the symptoms.

The factory at which the patient worked was visited. It was found that the lithographing rolls were dropped into a trough, six feet long and one foot wide, filled with benzine, and scrubbed clean. About two gallons of benzine evaporated from the trough daily. The room in which the work was done was large, but from the nature of the lithographing inks it had to be tightly closed to prevent the ink from drying. The patient had worked for over a year five hours daily at this trough where he was continually inhaling the fumes. No other workmen showed signs of benzine intoxication, but there were no others engaged in the same kind of work.

Formerly each printer had been required to clean the rolls from his machine, and this took only a few minutes each day. The patient had been cleaning all the rolls for the entire factory.

SUMMARY.

Chronic benzine poisoning is uncommon, but may occur. The symptoms complained of are referable almost entirely to the gastro-intestinal tract and the central nervous system.

FORMULAS FOR USE IN STANDARDIZING AUTOGENOUS VACCINES.[1]

BY LEO R. TEHON, A.B.,

URBANA, ILL., SERGEANT, MEDICAL DEPARTMENT, U. S. ARMY.

In the preparation of autogenous vaccines, we used, as a routine, Wright's method of counting. In so doing I have experienced some little discomfort in handling the array of figures usually employed in making the necessary computations.

As a short cut, the formulas here given have proved useful and satisfactory, it being entirely unnecessary to compute the number of organisms per cubic centimeter in the suspension. The result obtained in working out the formulas gives the number of cubic centimeters of the suspension of organisms needed to make up a desired quantity of vaccine which will contain the desired number of organisms.

FORMULAS.

Quantity of Vaccine.	Millions of Organisms per Cc.		
	1,000.	500.	200.
10 c.c.	$\frac{1.82 \times a}{b}$	$\frac{0.909 \times a}{b}$	$\frac{0.3636 \times a}{b}$
15 c.c.	$\frac{2.72 \times a}{b}$	$\frac{1.36 \times a}{b}$	$\frac{0.5454 \times a}{b}$
25 c.c.	$\frac{4.54 \times a}{b}$	$\frac{2.27 \times a}{b}$	$\frac{0.909 \times a}{b}$
50 c.c.	$\frac{9.09 \times a}{b}$	$\frac{4.54 \times a}{b}$	$\frac{1.818 \times a}{b}$
100 c.c.	$\frac{18.18 \times a}{b}$	$\frac{9.09 \times a}{b}$	$\frac{3.64 \times a}{b}$

In computing these formulas the number of red blood cells is arbitrarily taken to be 5.5 million per cubic millimeter; "*a*" is the average number of red blood cells obtained from the count, and "*b*" is the average number of organisms.

[1] From *Jour. Amer. Med. Asso.*, October 4, 1919.

Suppose we wish to make up 15 Cc. of vaccine which shall contain 500 million organisms per cubic centimeter. The red blood cell count we will suppose to have been 50, and the bacterial count 75. We now substitute these numbers in the proper formula as given, and have:

$$\frac{1.36 \times 50}{75},$$

which is equal to 0.9.

This is the number of cubic centimeters of the suspension of organisms which, when made up to 15 Cc., will give a vaccine containing 500 million organisms per cubic centimeter.

When the exact content per cubic centimeter of red blood cells is known for the blood used in the comparison, the following formula may be used in any case:

Total number of organisms needed.

$$\frac{b}{a} \times \text{number of r.b.c. per Cc.}$$

This gives the number of cubic centimeters of the suspension of organisms in making up a desired quantity of vaccine with a desired content of organisms.

Note: Hosp. Sgt. B. H. Brown, professionally an instructor in mathematics, made, at the request of the author, the first formula used by the author in standardizing vaccines. The author extends thanks and credit.

PRODUCTION OF CANDELILLA WAX IN MONTEREY, MEXICO.[1]

By Vice Consul Thos. Dickinson,

Monterey.

There are great quantities of candelilla shrub in the Monterey, Mexico, consular district. It is found chiefly in the Montemorelos and Galeana districts, located in the northwestern part of the State of Nuevo Leon, also in the Bustamante and Villaldama districts, in the northern part of the State. This shrub is grown entirely with-

[1] From *Commerce Report,* September 12, 1919.

out cultivation. The average shrub is about 25 inches high. Some plants, however, are about 40 inches in height.

While there are several factories making candelilla wax in this consular district, there is only one large one operating at present (with a daily output of about 662 pounds of wax) due to the present low price obtaining for the product in the United States.

It is reported that another large factory in this consular district is contemplating opening shortly.

Methods of Extracting the Wax.—After the shrub is pulled out of the earth it is placed in wooden tanks of water which is heated to the boiling point. At the moment of boiling a certain proportion of sulphuric acid is put in the tanks. As soon as the acid comes in contact with the wax it comes to the surface and is collected and put in receptacles until it congeals; it is then put in another tank where steam is used to dissolve the wax, adding sulphuric acid a second time. The wax is then in a refined state and is allowed to harden in certain molds. It is then ready for shipment. The wax can also be extracted by direct fire.

THE ACTIVE PRINCIPLE OF THE THYROID GLAND.[1]

In our issue of March, 1919 (p. 67), reference was made to Kendall's discovery of a principle of the thyroid gland, thyro-oxy-indol or *Thyroxin,* believed to be the active principle of the gland. In a further note on the subject (*Endocrinology,* 1919, 3, 156, Apr.-June); the same author reports on its physiological action. A series of experiments by himself and others show that the action of this substance is probably that of a catalyst which bears a quantitative relation to the production of energy within the tissues. The curve representing this relation is a straight line; that is, the increase in energy production with an increasing amount of thyroxin is simply an additive one. The substance appears to function within the tissues, and there is an equilibrium between the amount in the tissues, the amount in the blood-stream, and its source of supply, the thyroid gland. The entire absence of the substance from the body does not produce death, but merely a lowering of the level at which energy can be produced by the animal organism. In administering

[1] From *The Prescriber,* October, 1919.

more than the normal amount of thyroxin to the animal organism there is a distinct lag in the absorption of the compound by the tissues, and there is a rapid return to the normal content if administration is stopped. The chemical reactions which are brought into play by the administration of thyroxin are probably not different from the fundamental chemical reactions occurring in its absence. As a catalyst it merely increases the rate at which these fundamental reactions are carried out. The thyroid apparatus apparently has been added to the animal organism in order to permit a greater range of flexibility of energy output.

F. Ransom (*Lancet,* 1919, 2, 433; Sept. 6) reviews the literature on the relation of iodine to the thyroid gland, referring *inter alia* to Kendall's investigations. He concludes that there is considerable probability that the active principle of the thyroid gland is a breakdown product of protein, which may be, but is not, necessarily iodized. Iodine appears to have no direct effect on the activity of the internal secretion, and yet when that activity is diminished it can often be restored by administration of iodides. This action is due to two facts: (1) iodine is specifically absorbed by the gland; (2) the iodine in the gland in saturating the unsaturated fatty acids of the blood-supply favours the autolysis by which the active principle of the gland is produced. The efficacy of iodides in tertiary syphilis may be explained on these lines, and it is anticipated that tertiary syphilis may be successfully treated with thyroid extract.

CHAPARRO IN DYSENTERY: ISOLATION OF ACTIVE PRINCIPLE.[1]

A decoction of Chaparro amargosa (*Castela Nicholsoni*) was recommended by Nixon some years ago for amoebic dysentery (see *Prescriber,* 1914, pp. 225, 284; 1916, p. 118). Chaparro, or bitter bush, is a shrub which grows in Texas and Mexico. The entire plant is used, 6 to 8 ounces of the decoction being given by the mouth half an hour before each meal. Rectal enemata of from 500 to 2,000 Cc. are also given twice daily, these being retained as long as possible. A fluid extract is prepared, the dose of which is 60 to 180 minims. Its use has been reported in cases where emetine has failed.

[1] From *The Prescriber,* October, 1919.

Further experiments were reported in 1918 by Shepheard and Lillie (see *Prescriber,* May, 1918, p. 96). These investigators separated from the drug a crystalline bitter principle, but whole preparations of the drug itself gave fairly satisfactory results, those from the bitter principle were inconclusive.

Experiments were also made by Sellards and McIver, of Boston, U. S. A., who paid special attention to the chemical examination of the material (*Jour. Pharm. and Exper. Therap.,* 1918, II, 331; May). An extended analysis of the material led to the separation of a product which appears to be a glucoside or similar compound. It reduces Fehling's solution, especially after hydrolysis with hydrochloric acid. Its most characteristic chemical feature was a pronounced colour reaction with sulphuric acid. A blue colour appeared, which changed to purple, and later to brown. The substance that was separated was found to be toxic for small animals. This product has been tested among three patients suffering acute typical amoebic dysentery. The patients received one gm. of the powder three times daily at the beginning of meals. No other treatment was adopted. On the second day of treatment two of the patients improved. On the fifth day of treatment a thorough examination of the faeces failed to reveal amoebae. Some days later, purging yielded stools free from *Entamœba histolytica.* The third patient had twice previously been "cured" by emetine, but had relapsed. Treatment with the principle obtained from chaparro produced a freedom from amoebae which has been maintained for some time.

THE ALLEGED FOOD VALUE OF SACCHARIN.[1]

Not long ago my attention was directed in the JOURNAL[2] to the subject of physiologic oxidation and its alleged relation to certain catalytic properites of the tissues. The latter, and particularly the blood, are capable of liberating oxygen from hydrogen peroxid by an enzyme-like reaction which has been ascribed to "catalase." It has been assumed by a few investigators, notably Burge, that a measure of this catalytic power of the tissues is an index of their metabolic activity. We need not reiterate here the criticisms of this

[1] From *Jour. Amer. Med. Asso.,* Nov. 8, 1919.

[2] "Oxidation in the Body," editorial, *J. A. M. A.,* 72: 1679 (June 7), 1919.

view which have already been advanced, notably by Becht.[3] He remarks that since the catalytic power of the blood varies between enormously wide limits under the same conditions, it is unlikely that the catalases are important and that the measurement of them can explain "the mysteries of the processes of oxidation." One of the factors particularly advanced by Burge in support of his theory was the asserted increase in catalase noted as the accompaniment of features known to promote metabolism. Stehle[4] has repeated the studies at the University of Pennsylvania School of Medicine without finding the parallelism on which the catalase theory of metabolism is based. He observed that the fluctuations in the catalase content of the blood are due to variations in the number of red calls. Consequently, Stehle notes, it is simpler to regard the catalase content as dependent on the number of erythrocytes than to assume any direct relation between catalase and biologic oxidations. Among other compounds, Burge has ascribed to saccharin the property of increasing the catalase content of the blood.[5] Correlating this with an increase in metabolism, he concluded that saccharin exhibits advantages characteristic of foods that are known to augment metabolism. Despite the fact that the doses used by Burge in his experiments amounted to 5 gm. per kilogram of body weight and thus far exceeded any dietetically significant quantities, his seeming approval of the effect of these enormous doses of saccharin was promptly made use of by certain advertisers to promote the use of this chemical substance in the diet. Stehle[4] has disposed of the assumed basis for this undesirable propaganda by what amounts essentially to a denial of the claims made. The advocacy of saccharin as a food can no longer pose in the garb of scientific proof.

[3] Becht, F. C.: "Observations on the Catalytic Power of Blood and Solid Tissue," *Am. J. Physiol.*, 48: 171 (March), 1919.

[4] Stehle, R. L.: "Some Data Concerning the Alleged Relation of Catalase for Animal Oxidations," *J. Biol. Chem.*, 39: 403 (Sept.), 1919.

[5] Burge, W. E.: "Saccharin for Sugar," *Science*, New York, 48: 549, 1918.

BACTERIA AND VITAMINS.[1]

The demonstration that the nutritive welfare of the higher animals is dependent on an adequate supply not only of the familiar foodstuffs but also of certain as yet unidentified "food accessories," the so-called vitamins, has been stimulating in various fields of biologic science. The hypothesis of the rôle of vitamines in nutrition has been transferred to the growth of plants by Bottomley[2] with results that speak strongly for an analogy between plants and animals with respect to the promoting factors. Subsequently the possible part that may be played by substances analogous in function to the vitamins of animal nutrition has been debated with respect to the multiplication of bacteria.

Bacteriologists have long recognized the difficulties attending the production of cultures of microörganisms on synthetic mediums prepared from purified substances. Blood serum, tissue extracts and decoctions and other mixtures of largely unknown chemical make-up have been employed by preference as culture mediums for bacteria. For a long time the necessity of supplying such tissue products was assumed to be attributable to the fact that the lowest forms of life can attack only a limited group of fairly simple compounds. The native proteins, for example, are singularly resistant to direct disintegration by bacteria; whereas the cleavage products of proteins, the amino-acids, form an excellent nitrogenous pabulum for microbial nutrition. Latterly, however, it has become apparent that mixtures of even such simple nutrient fragments as amino-acids, sugars and inorganic salts, in mixtures of suitable reaction are poor culture mediums. To earlier evidences of the need of something more in the successful cultivation of bacteria, particularly the more delicate pathogenic varieties,[3] further testimony has been

[1] From *Jour. Amer. Med. Asso.*, Oct. 18, 1919.

[2] Bottomley, W. B.: "Some Accessory Factors in Plant Growth and Nutrition," *Proc. Roy. Soc. London*, Series B, 88: 237, 1914–1915.

[3] Cole, S. W., and Lloyd, D. J.: "The Preparation of Solid and Liquid Media for the Cultivation of the Gonococcus," *J. Path. and Bacteriol.*, 21: 267, 1916–1917. Gordon, M. H.: Hine, J. G., and Flack, M.: "An Experimental Study of the Cultural Requirements of the Meningococcus," *Brit. Med. Jour.*, 11: 678, 1916. Lloyd, D. J.: "On Vitamine, Amino-Acids and Other Chemical Factors Involved in the Growth of the Meningococcus," *J. Path. and Bacteriol.*, 21: 113, 1916–1917. Agulhon, H., and Lyroux, R.: "Contribution à l'étude des vitamines utilisables à la culture des microörganismes; application au bacille de l'influenza (B. de Pfeiffer)," *Compt. rend. Acad. d. sc.*, 167: 597, 1918.

added in the case of the diphtheria organism by Davis and Ferry[4] of Detroit. They found that it could not be cultivated in synthetic mediums composed of amino-acids and mineral salts adjusted to the optimal hydrogen-ion concentration. Addition of the extractives creatin and creatinin, and the purin bases xanthin and hypoxanthin, was to no advantage. Typical luxuriant growth of *Bacterium diphtheriæ* was obtained in a mixture of 99.5 per cent. of synthetic medium and only 0.5 per cent. of bouillon. Production of active toxin, however, required the presence of 10 per cent. bouillon. "Peptone" permitted only deficient growth and toxin formation. Davis and Ferry believe that such observations suggest a vitamin requirement, furnished in these cases by the beef infusion, not only for the luxuriant growth of the diphtheria bacillus but also particularly for strong toxin production. Incidentally, they believe that the results obtained favor the view that diphtheria toxin is not a synthetic product but rather "a catabolic substance elaborated by *Bacterium diphtheriæ* only in the presence of certain amino-acids and accessory factors, the latter probably of a vitamin character."

Kligler[5] has recently noted, in studies made at the Rockefeller Institute for Medical Research, that the growth of a large number of pathogenic bacteria, including the streptococcus, pneumococcus and meningococcus, is favorably influenced by the addition of small amounts of tissue extracts. Beef heart, rabbit and cat tissues, and human nasal secretions contain substances favorable to the growth of the organisms tested. The mucosa of different organs, spleen, liver and kidney, are relatively rich in these substances, while muscle is relatively poor. The favorable effect of the extracts is manifested by an enhancement of growth and a reduction of lag. Neither the extracts alone nor the culture medium alone was capable of supporting bacterial growth suitably. Kligler interprets his results as evidence that the facilitating substances belong to the category of the vitamins; and since ether extracts are without the potency referred to, the conclusion is further offered that the vitamins favorable for bacterial development belong to the water-soluble rather than to the fat-soluble type.

[4] Davis, L., and Ferry, N. S.: "Studies on Diphtheria Toxin, II, The Rôle of the Amino-Acids in the Metabolism of Bacterium Diphtheriæ," *J. Bacteriol.*, 4: 217 (May), 1919.

[5] Kligler, I. J.: "Growth Accessory Substances for Pathogenic Bacteria in Animal Tissues," *J. Exper. M.*, 30: 31 (July), 1912.

GROWTH OF AMERICAN TRADE IN PERFUMERIES, COSMETICS, AND TOILET PREPARATIONS.[1]

(Prepared by the Division of Statistics, Bureau of Foreign and Domestic Commerce.)

A very substantial increase in the foreign trade of the United States in perfumeries, cosmetics, and toilet preparations occurred during the first seven months of 1919 as compared with January-July of last year, imports rising by 38 per cent., domestic exports by 110 per cent., and foreign exports (reëxports) by 139 per cent. That this growth was steady month by month as compared with the corresponding figures for the previous year (with the exception of reëxports in January and March) is clearly seen from the following table:

Month.	Imports.		Exports.			
			Domestic.		Foreign.	
	1918.	1919.	1918.	1919.	1918.	1919.
January	$203,695	$208,855	$335,873	$660,504	$4,844	$ 1,652
February	289,532	349,692	199,749	881,045	217	1,081
March	243,477	373,414	390,303	804,316	3,956	554
April	263,427	391,820	287,029	419,200	2,309	20,540
May	394,964	469,891	308,813	591,636	4,562	12,591
June	324,846	417,097	429,409	709,659	2,286	9,806
July	79,702	281,280	247,047	481,026	3,286	4,968
Total	$1,799,643	$2,492,049	$2,198,223	$4,607,386	$21,442	$51,195

Fiscal Year Export Record: The progress in this line of foreign trade is even more noticeable in the figures for fiscal years ending June 30. In 1919 imports amounted to $3,670,577, domestic exports reached the record-breaking total of $6,077,851, and foreign products reëxported were valued at $79,767. As compared with the corresponding figures for 1918 there is an increase of $173,000 in imports, $2,100,000 in exports, and $57,000 in reëxports. That this gain is no mushroom growth, nor entirely the result of war-time conditions, is evidenced by the import and export figures for the past eight fiscal years:

[1] From *Commerce Reports,* October 10, 1919.

Year Ended June 30.	Imports.	Exports.	
		Domestic.	Foreign.
1912	$1,645,992	$1,147,630	$18,652
1913	1,873,585	1,441,982	9,700
1914	2,309,027	1,620,872	17,969
1915	2,473,144	1,715,059	11,889
1916	3,105,906	2,903,063	17,682
1917	3,806,699	3,618,620	12,167
1918	3,497,695	3,965,465	22,724
1919	3,670,577	6,077,851	79,767

Prior to the war the annual imports of perfumeries, cosmetics, and toilet preparations into the United States invariably exceeded the domestic exports. In 1912 imports surpassed the exports by nearly half a million dollars; and while every fiscal year since until 1918 has shown a material gain in the value of imports, the exports have also increased until, in 1918, they exceeded the imports by $467,770 and in 1919 by $2,407,274. Destination of Exports in June and July: How world-wide is the trade in American-made perfumeries, cosmetics, and toilet preparations is shown by their distribution among 77 countries in June and 66 countries in July. During these two months the Philippines were the United States' best customer, taking products of the class mentioned valued at $155,484. China purchased to the extent of $114,155, Canada to the extent of $95,992, England $73,856, Australia $67,107, Cuba $65,496, Denmark $61,527, British South Africa $58,066, Mexico $36,983, Hongkong $34,257, Dutch East Indies $26,325, and South America an aggregate of $186,153 (of which $80,040 went to Argentina). While French, English, and German goods have had a large proportion of the Latin American trade in the past, particularly French perfumes, English fine soaps, and German articles which supplied the cheaper trade, there is now a growing demand for North American products such as talcum and face powders, creams, manicure preparations, and perfumes, if put up in attractive packages.

From a study of the export and import statistics it may be accurately inferred, notwithstanding the general rise in values, that American production has greatly increased in quantity during the last five years, in order to supply an increased domestic demand formerly dependent in considerable degree on imports chiefly from Germany, France, and Switzerland, and to take care of the foreign trade to the extent shown during the last fiscal year.

CORRESPONDENCE.

SPECIFICATIONS FOR CHEMICALS AND REAGENTS.

AMERICAN JOURNAL OF PHARMACY,

Gentlemen: The attached notes which are to be published in the *Journal of Industrial and Engineering Chemistry* for December relate to some work which is being undertaken for the benefit of analytical chemistry.

Although it is probable that nearly every chemist who would be interested in the subject will see these articles in the *Industrial Journal,* the material is being sent to a number of journals like your own which reach a certain class of readers who may have an interest in the question of specifications for chemical reagents, although they are not directly engaged in chemical work. The committee is not able to judge as to the desirability of publication or reference to this material in your journal, but is submitting it to you for any use you may desire to make of it.

Very truly yours,

W. D. COLLINS,
Secretary,
Committee on Guaranteed Reagents and Standard Apparatus.

SPECIFICATIONS FOR REAGENTS.[1]

In the belief that a valuable service can be rendered both to the manufacturers and users of reagents and apparatus, through standardization, the American Chemical Society appointed a committee which is now organized and at present is collecting data regarding the quality of reagents on the market.

It seems that in general the experience of users agrees with that of the Bureau of Chemistry as reported by H. E. Buc in the December number of the Journal of Industrial and Engineering Chemistry. The chief complaints appear to be in regard to the lack of reliability of the analyses rather than unsatisfactory purity of the reagents themselves. It is also evident that in many instances impurities which have caused dissatisfaction could have been removed by exercising sufficient care in production.

[1] Published in the *Journal of Industrial and Engineering Chemistry,* December, 1919.

Insufficient knowledge on the part of the producer, both as to requirements and acceptable methods for testing, has been one cause for any dissatisfaction relative to reagents. Some makers have signified a willingness to follow standard specifications and methods of testing, and the committee therefore proposes to begin work on the specifications for sulphuric, nitric, and hydrochloric acids and ammonia. This will be followed with specifications for other reagents.

It is requested that suggestions be sent to the secretary of the committee, W. D. Collins, Bureau of Chemistry, Washington, indicating the specifications which would be acceptable, the uses to which the reagents are put in any special case, and the methods which are satisfactory in determining the purity of the reagents and the presence and amount of objectionable impurities.

In the near future coöperation in the standardization of laboratory apparatus will be sought.

Chemicals Received by the Bureau of Chemistry During the War.[1]

By H. E. Buc.

(Abstract.)

1. During the last four years about 1,300 shipments of chemicals from a large number of dealers and manufacturers have been tested in the Bureau of Chemistry. The greater part of the reagents bore an analysis on the label.

2. Most of the chemicals examined are satisfactory. Occasional impurities are found often enough in chemicals from practically all manufacturers to make it necessary to test all shipments.

3. The standard acids, ammonia, alkali salts and alkali, and most of the organic solvents are generally satisfactory.

4. The soluble salts other than alkali salts are generally acceptable but are seldom of a high degree of purity.

5. Certain organic solvents and solids are either unobtainable or unsatisfactory.

6. The insoluble products are generally unfit for use in analytical work.

[1] Published in *Journal of Industrial and Engineering Chemistry*, December, 1919.

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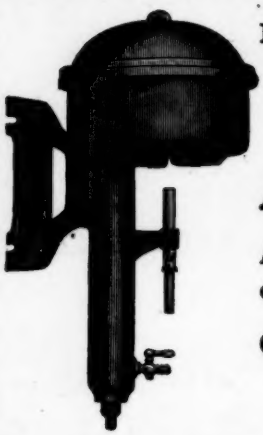

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